

REMARKS

Examiner Interview

Applicant thanks the Examiner for granting an interview on December 19, 2005. Both the undersigned and Sam Pasternack, Registration Number 29,576, participated, along with inventors Frank Feda, Ruth Shefer, and Peter Oettinger. Applicant suggested amending the recitation of an “electrically-insulating material containing a radio-opaque material” to indicate that the radio-opaque material is *distributed within* the electrically-insulating material to overcome the rejections over Skillicorn. The Aitken and Nomikos references were also discussed. With respect to the Nomikos reference, the recitations of a resonance converter have been amended to recite that the resonant converter drives the high voltage power supply *via an amplitude modulated waveform drive at a substantially resonant frequency*. New claims 42-44 recite that this drive operates in response to a sensed resonant frequency. This amendment is supported by the specification at page 28, lines 12-13 and 19, and Figure 4B. Aitken is discussed below.

Rejections under 35 U.S.C. § 102

Claims 1, 4, 9, 11, 30, 31, 34, and 39 stand rejected under 35 U.S.C. 102 as being anticipated by Skillicorn. Applicant respectfully disagrees. Applicant submits that Skillicorn fails to disclose encapsulating components “in a solid, electrically-insulating material containing a radio-opaque material distributed within”, as recited in independent claims 1 and 30. Rather, Skillicorn discloses a block surrounded by a lead sheath (column 5, lines 33-37 and column 6, lines 26-29). The lead sheath is not distributed within the material that makes up the block. Rather, the lead sheath surrounds the apparatus. Such sheathing may have seams that allow radiation leakage during operation and is difficult to fit around apparatus with complex geometries (see claim 9). In contrast, in independent claims 1 and 30, the radio-opaque material is distributed within the electrically-insulating material.

With respect to claims 9 and 39, Skillicorn fails to disclose a molded complex shape. Rather, Skillicorn recites a molded block that is shown in Figure 1 as a rectangular block.

Claims 4, 11, 31, and 34 depend from claims 1 and 30 either directly or indirectly. As a result, Applicant respectfully submits that claims 1, 4, 9, 11, 30, 31, 34, and 39 are patentable in view of Skillicorn.

Rejections under 35 U.S.C. § 103

Claims 2, 3, 12, 18, 20, 32, and 33 stand rejected under 35 U.S.C. 103 as being obvious over Skillicorn in view of Nomikos. Applicant respectfully submits that neither of these references remedies the deficiencies of the other in failing to disclose the invention. As discussed above, Nomikos fails to disclose a resonant converter that operates via an amplitude modulated waveform drive at a substantially resonant frequency, as recited in claims 2, 12, and 32. The operation of the resonant converter is described at page 28, line 10 – page 29, line 16. The resonant converter recited in claim 2 operates at a substantially resonant frequency, for example, the frequency of the resonance between the primary winding of transformer 136 and capacitor C2 in the resonant converter. In contrast, the operation of the switching converter of Nomikos responds to an output voltage at the cathode (column 11, lines 8-20). The frequency in Nomikos is dictated not by any inherent resonance that may exist in the system (indeed, with the transformer primary connected to switch Q1, there is no resonance on the side of the transformer connected to the resonant converter). Rather, the frequency is dictated by the control pulse from IC1, which dictates the time density (e.g., frequency) of constant energy pulses that are switched on and off by IC2 (see column 11, lines 8-20). With respect to claim 18, Skillicorn fails to disclose an insulating material containing a radio-opaque material distributed within or a molded complex shape. Claim 3 depends from claim 2; claim 20 depends from claim 12, and claim 33 has been amended to depend from claim 32. Applicant submits that claims 2, 3, 12, 18, 30, 32, and 33 are patentable in view of Skillicorn and Nomikos, whether considered separately or in combination.

Claims 5, 21, 23, 25, 29, and 35 stand rejected under 35 U.S.C. 103 as being obvious over Skillicorn in further view of Malcolm. Applicant submits that Malcolm fails to remedy the failure of Skillicorn to disclose the invention as recited in independent claims 1 and 30, from which claims 5 and 35 depend, respectively. With respect to claim 21, Applicant submits that Skillicorn fails to disclose encapsulating electronic components in a solid cast block including a radio-opaque material distributed within, as recited in amended claim 21. Claims 23, 25 and 29 depend from claim 21. Applicant submits that claims 5, 21, 23, 25, 29, and 35 are patentable in view of Skillicorn and Malcolm, whether considered separately or in combination.

Claim 14 stands rejected under 35 U.S.C. 103 as being obvious over Skillicorn and Nomikos in view of Malcolm. Applicant submits that Malcolm fails to remedy the failure of Skillicorn and Malcolm to disclose the subject matter of the invention as recited in claim 12, from which claim 14 depends. Applicant submits that claim 14 is patentable in view of Skillicorn, Nomikos, and Malcolm, whether considered separately or in combination.

Claims 6-8, 15-17, 26-28, and 36-38 stand rejected under 35 U.S.C. 103 as being obvious over Skillicorn, Nomikos, and Malcolm in view of Davies. Applicant respectfully disagrees. Applicant submits that Davies fails to disclose the use of a conductive layer on the *outside* of an encapsulating block, as recited by claim 5, 14, 21, and 35, from which claims 6-8, 15-17, 26-28, and 36-38 depend. Rather, Davies discloses the use of a conductive layer *inside* an insulative cover (Abstract). Applicant submits that, even if Skillicorn, Nomikos, and Malcolm disclosed the invention as recited in claims 5, 14, 21 and 35, that combining Davies with these references would not result in the invention as recited in claims 6-8, 15-17, 26-28, and 36-38. Applicant submits that claims 6-8, 15-17, 26-28, and 36-38 are patentable over Skillicorn, Nomikos, Malcolm, and Davies, whether considered separately or in any combination.

Claims 10, 19, and 40 stand rejected under 35 U.S.C. 103 as being obvious over Skillicorn and Nomikos in view of Courtois. Applicant submits that Courtois fails to remedy the failure of Skillicorn and Nomikos to disclose the subject matter of the invention as recited in claims 1, 12, and 30, from which 10, 19, and 40 depend. Applicant submits that claims 10, 19, and 40 are patentable in view of Skillicorn, Nomikos, and Courtois, whether considered separately or in any combination.

Claims 13 and 22 stand rejected under 35 U.S.C. 103 as being obvious over Skillicorn, Nomikos, and Malcolm in view of Moulton. Applicant submits that Moulton fails to remedy the failure of Skillicorn, Nomikos, and Malcolm to disclose the invention as recited in claims 12 and 21, from which claims 13 and 22 depend. Applicant submits that claims 13 and 22 are patentable in view of Skillicorn, Nomikos, Malcolm, and Moulton, whether considered separately or in any combination.

Claim 24 stands rejected under 35 U.S.C. 103 as being obvious over Skillicorn and Malcolm in view of Tomita. Applicant submits that there is no indication in Tomita that the epoxy resin disclosed is suitable for use as an electrically insulating material for electronic components used in x-ray emission. Furthermore, even if the combination of Skillicorn and Malcolm resulted in the invention of claim 21, from which claim 24 depends, Applicant submits that the addition of these references to Tomita does not result in the invention of claim 24. Tomita discloses a vacuum casting method for a two-part epoxy. However, claim 24 does not recite a vacuum casting system but a casting system for a two-part epoxy resin. Additionally, in many epoxy casting systems, the combination of the two parts of the epoxy results in the generation of air bubbles in the epoxy as the two parts are mixed. Therefore, the combination of Tomita with Skillicorn and Malcolm can only be the result of impermissible hindsight reconstruction, because there is no indication in the claim that reducing air bubbles, the motivation cited by the Examiner, is actually a goal of the claim, and there is no indication in Tomita that his disclosure is appropriate for use with high voltage equipment. Applicant submits that claim 24 is patentable in view of Skillicorn, Malcolm, and Tomita, whether considered separately or in any combination.

Claim 41 stands rejected under 35 U.S.C. 103 as being obvious in view of Skillicorn in further view of Aitken. Applicant submits that Aitken fails to remedy the failure of Skillicorn to disclose the invention as recited in claim 1, from which claim 41 depends. Aitken discloses a preformed shield that is disposed about an x-ray tube (page 1, lines 48-50). Applicant submits that the combination of the preformed shield of Aitken with Skillikorn does not result in the claimed invention. The solid, electrically-insulating material of the claimed invention encapsulates the X-ray tube, preventing not only radiation leakage but high voltage breakdown. In contrast, a pre-molded shell such as that disclosed by Aitken merely surrounds the x-ray tube but cannot conform to the exterior of the x-ray tube. As a result, there are spaces between the shell and the x-ray tube that would permit breakdown when high voltage was used (c.f. claim 1). This is contrary to the goals of Skillikorn, which seeks to provide a method of insulating electrical components used to produce high voltage. As a result, any combination of Skillikorn and Aitken can only be the result of impermissible hindsight reconstruction. See In re

Dembiczak, 175 F.3d 994 (Fed. Cir. 1999). Applicant submits that claim 41 is patentable in view of Skillicorn, and Aitken, whether considered separately or in combination.

Double Patenting


Claims 1-41 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 8-29, 51-60, and 63-74 of U.S. Patent Application No. 10/370,783 (“the ‘783 application”) in view of Aitken. Applicant respectfully disagrees. The Examiner states, “It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the claims of Application No. 10/370,783 as modified above with the tin or lead oxide of Aitken...” (Office Action dated October 14, 2005, paragraph 21). Applicant submits that this does not reflect the standard for applying a double patenting rejection. Applicant submits that the standard for double patenting is whether the claims of the ‘783 application and the instant application are patentably distinct or whether the subject matter of the instant claims is fully disclosed in the ‘783 application (MPEP 804), not whether a particular modification would have been obvious to one skilled in the art.

Furthermore, Applicant submits that it would have been impossible for one skilled in the art at the time the invention was made to combine the claims of the ‘783 application with the teachings of Aitken. At the time that the claimed subject matter was invented, it was neither known nor obvious to those skilled in the art. These are requirements for an invention under U.S. law. See 35 U.S.C. 102-103. It would not have been obvious for a hypothetical skilled artisan to combine any reference with an invention known only to the inventors.

Applicant submits that the preformed shield of Aitken is not combinable with the teachings of the ‘783 application. Aitken discloses a preformed shield that is disposed about an x-ray tube (page 1, lines 48-50). The encapsulant of the ‘783 application is described as substantially free from entrained air and in intimate contact with the outer surface of the x-ray tube (page 12, line 5, and page 19, line 15). Air pockets within the epoxy or along the interface between the encapsulant and the x-ray tube can lead to high voltage breakdown. In contrast, a pre-molded shell such as that disclosed by Aitken cannot conform to the exterior of an x-ray tube. As a result, there is no motivation to combine the teachings of Aitken with those of the claims or specification of the ‘783 application. Furthermore, the combination of Aitken with the claims of the ‘783 application do not result in the claims of the current application. Applicant respectfully requests that the Examiner reconsider the rejection.

A Petition for Extension of Time and the appropriate small entity fee are enclosed.
Please charge any fees associated with this filing, or apply any credits, to our Deposit Account
No. 03-1721.

Respectfully submitted,



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AMENDMENTS TO THE DRAWINGS:

Attached replacement drawing sheets and annotated sheets showing changes to the drawings are attached to this Response as an Appendix. These replacement sheets comprise amendments to Figures 1C. These amendments correct the informalities noted in the objections to the drawings by the Examiner. Specifically, interconnect wiring 18 has been properly labeled. Accordingly, Applicants respectfully request that all objections to the drawings be withdrawn.

2/14

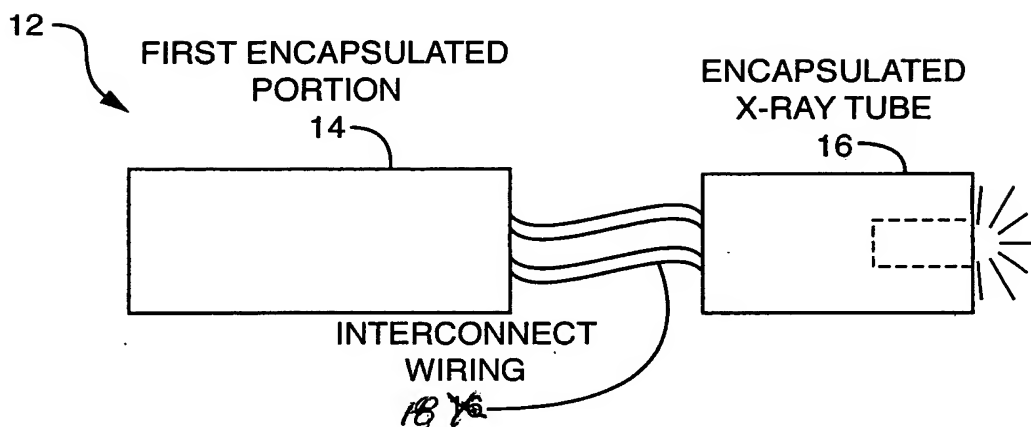


FIG. 1C

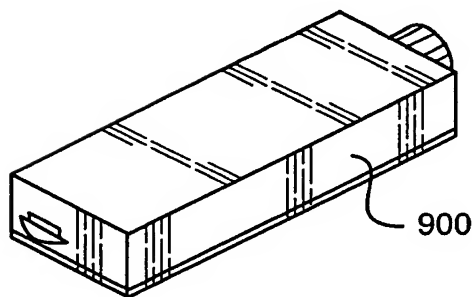


FIG. 2A

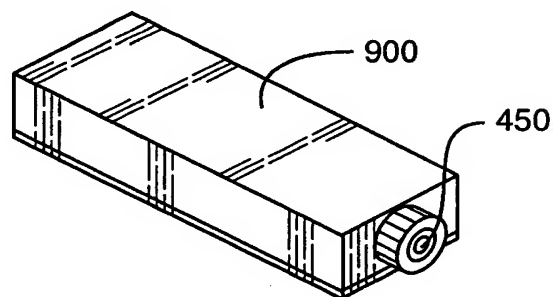


FIG. 2B

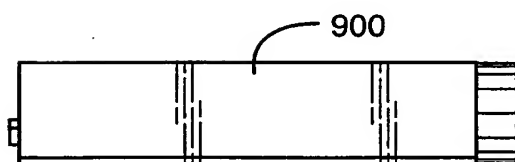


FIG. 2C

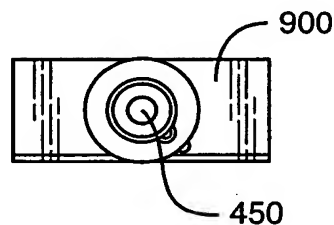


FIG. 2D